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Magnesium Metallic complex coordinated phenolic used for inhibitor of Reactive oxygen species (ROS) in biological system

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Mitochondrias are essential organelles for the life and death of the cell, participating of the cellular energy metabolism as well as in the control of programmed cell death[1]. But mitochondria are responsible for the major source of reactive oxygen species *in vivo*, thus being mitochondrial oxidative damage one of the main causes of many chronic diseases. This work will show the results about the potential of new antioxidant compounds based on the complex Mg-isoflavones which can be used to inhibit reactive oxygen species (ROS) *in vivo*. Phenolic acids have important roles in the biological system, highlighting the prevention and treatment of noncommunicable neurodegenerative and chronic diseases. The use of complex Mg-isoflavones showed an IC_{50} of 96.00 ± 4.12 μM to inhibit the stable radical DPPH shown in Figure 1 A.

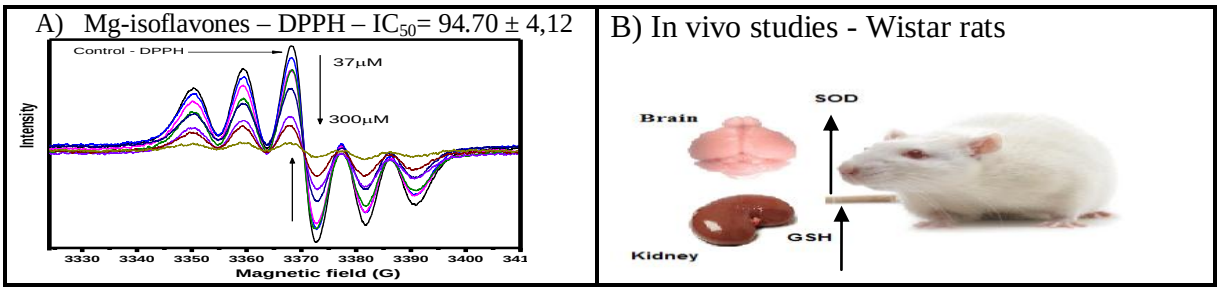

Figure 1*: Inhibition of DPPH radical complex Mg-isoflavones using Electron paramagnetic resonance (EPR)* ***(A),*** *Biochemical studies (in vivo) in the brain and kidneys of Wistar rat* ***(B).***

Biochemical studies in rats were performed by using the complex Mg-isoflavones on enzymes superoxide dismutase (SOD) and glutathione (GSH). It was shown an increased SOD activity in the hippocampus, thu indicating that this complex can stimulate the production of SOD in the brain and stimulate the production of glutathione (GSH) in kidney. This result is of great importance as GSH is the best antioxidant in the human body. Moreover, it is not possible to verify that Mg-isoflavones can induce toxicity to animals at the tested concentration (3 mg/mL maximum solubility in saline solution 5%, w/v).

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